

TASK: P754068



WK PKG: PR ET-093-ST-0012
ENG GRP: ETM
TSK LDR:

FLOC: VAB
MLOC: ET-93
STS/FLT: 107 /001

TITLE: CONDITION: EB-4 BEARING HAS VERTICL SCRATCHHES ON INNER BORE

OPERATIONS LIST



NUMBER TaskBarCode	TITLE	OperationBarCode	DEPT/SHOP
10	CONDITION: EB-4 BEARING HAS VERTICL SCRATCHHES ON INNER BORE		
20	CONDITION: EB-4 BEARING HAS VERTICL SCRATCHHES ON INNER BORE		53700 SCH

P754068

WC

147

8/2/01

 National Aeronautics and Space Administration John F. Kennedy Space Center				1. Report Number <input type="checkbox"/> INTERIM PROBLEM REPORT <input checked="" type="checkbox"/> PROBLEM REPORT. <input type="checkbox"/> DISCREPANCY REPORT	
2. Detected During \$0033 DP.140		3. Work Area/Location/Zone VAB-2		4. End Item Control Number ET-93- ST -0012	
5. Part/Program Name EB-4 BEARING		6. Part/Program Number 36112-1		7. Serial/Rev No. 0393	
8. NHA Part Number 80911051135		9. STS/Eff 107T093		10. Reported by R. PATTON ZQ6651	
11. Date/Time 1000		12. Item		13. Problem Description	

S/B: NO SCRATCHES

ENG. CON. MARK WALLAM ETM

TPS/RSI Inst'l'd: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		C/P Inst'l'd: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		C/P Part Number:	
14. Process Escape <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	15. Constraints See CRR <input type="checkbox"/> To: TS002-013	16. Crit H/W F/M 1 1 3	17. Eng Grp ETM	18. MR Req'd <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	19. Out of Family <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
20. Item		21. Disposition/Cause/Corrective Action		22. Tech Contr Govt	

23. Data Code T054R.1.	24. Date OCT 25 2002
25. RC Action Req'd <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ITEMS:	26. Related Reports IMPRESSION EVALUATION REPORT UTOP CHS INDEX

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VM
081





UTOP Change Index

WAD: ET-093-ST-0012

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PR ET-093-ST-0012

DAMAGED EB-4 SPHERICAL BEARING

Element/End Item: **ET**
Flow/Usage: **STS-107**
Facility: **VAB**
Design Center Concurrence: **NA**
Category:
OPR: **ETM**
TTL ORG: **TO**

**This document does not contain
hazardous operations.**



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PR E-1-093-SF-0012

Approval Record

DAMAGED EB-4 SPHERICAL BEARING

Technical Contact: Mark Wollam Phone: 1-3372

Category II TOP Only

This Approval Record is for all Operation No(s) listed below:

Initial Released Operations: 10

Added Operations:

Deleted Operations:

Replaced Operations:

Change Index Added:

Check Family Type: In Family ☒ Out of Family ☐ NMA ☐

Organization	Name (Printed)	Name (Signature)	Date
ETM SE	Mark Wollam	Mark Wollam	9/23/02
SE Check	W Richards	W Richards	9/23/02

WG
USA
10/10/02

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PR ET-093-ST-0012

Approval Record

DAMAGED EB-4 SPHERICAL BEARING

Technical Contact: Mark Wollam Phone: 1-3372

Category II TOP Only

This Approval Record is for all Operation No(s) listed below:

Initial Released Operations: 10

Added Operations: 20

Deleted Operations: NA

Replaced Operations: NA

Change Index Added: _____

Check Family Type: In Family ☒ Out of Family[] NMA[] NMA[]

Organization	Name (Printed)	Name (Signature)	Date
ETM SE	Mark Wollam	<i>Mark Wollam</i>	10/8/02
SE Check	<i>R. Brewer</i>	<i>R Brewer</i>	10/09/02

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1.0 INFORMATION

1.3 Operations List

Operation		Shop/ Cntl Rm Console	OPR	Haz (Y/N)	Duration (Hrs)
No.	Title				
10	Evaluate Spherical Bearing	ET/ na	ETM	N	2.1
20	PR Summarization and Closure	ET/ NA	ETM	N	1.69

2.0 SAFETY INFORMATION

2.4 Reference Safety Documentation

Number	Rev	Title
KHB 1710.2	LI	KSC Safety Practices Handbook
GSOP 5400	LI	Ground Safety Operating Procedure

3.0 STAGING REQUIREMENTS

3.2 Parts, Materials, Equipment, and Special Tools

3.2.7 Tools and Test Equipment

OPERATION 10

Part No./Find No.	Nomenclature	Qty
Torque To	200 to 220 in. lb	1

3.2.8 Personal Protective Equipment

OPERATION 10	Nomenclature
	chemical resistant gloves
	chemical splash goggles
	face shield

4.0 PLANNING REQUIREMENTS

OIR Required: Yes [], No [X]

Predecessors, Successors, or Configuration Required: None

4.5 Supporting Subtasks

Subtask Number	Subtask Title / Function to be Performed	Calling Op / Step
-----	-----	-----
T5045.082	MOLD IMPRESSION APPLICATION AND EVALUATION	10-2

4.1 Critical Skill Requirements

Number	Course Title	Operation
242	TORQUE AND SAFETY WIRING (TQ)	10

5.0 CONFIGURATION ACCOUNTING AND VERIFICATION

5.5 List of References

OPERATION 10

Reference No.	Rev	Title
36L12-1	(LI)	EB-4 Spherical bearing

OPERATION 20

Reference No.	Rev	Title
80901019010	(LI)	ET Acceptance Manual

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OPERATION 10 Repair Primer

Shop: ET

Cntrl Rm Console: na

OPR: ETM

Zone: na

Hazard (Y/N): N

Duration (Hrs): 2.1

WARNING

Isopropyl Alcohol is flammable and is a skin, eye and respiratory tract irritant that affects the central nervous system. Insure adequate ventilation, avoid inhalation of vapors and do not use near heat, sparks or open flame. Personnel shall wear chemical resistant gloves and chemical splash goggles. When working at eye level or above wear a face shield over goggles.

WS002.a 02-02-01

NOTE


Operations involving Crit 1/1R/1S items are contained in the following steps.

ET Spherical Bearing (EB-4) Inspection


Remove P78-3102-4-102 protective cover from EB-4 (RH) bearing.

Wipe spherical bearing surfaces clean using Rympole cloth and IPA.

Place protective cover on clean, padded surface and protect from debris / contamination for reinstallation.

T: 
10-3-02



Obtain mold impression of PD 1 defect on EB-4 spherical bearing per RT OMI T5045.082

T: 
10-3-02

10-3 **Verify** Ref: 36L12-1 (LI) EB-4 Spherical bearing and race surfaces are free of nicks and gouges as outlined in Criteria Table below. Ref. Figure 10-1.

Verify PD 1 defects (scratches in bore) in Region II are acceptable per Criteria and mold impression results.

Verify bearings and race free of grease, foreign material and raised metal.

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Region	EB Spherical Bearing Inspection Criteria (Ref OMRS S00HB0.160)
I	Spherical surfaces and race - no defects greater than 0.010 in. deep and proximity to defects no less than 0.20 in.
II	Bearing bore - no defects greater than 0.006 in. deep and proximity to other defects no less than 0.20 in.
III	Area between ball and within 0.040 in. of outer edge - no defects greater than 0.02 in. and proximity to other defects no less than 0.20 in.
IV	Outer and inner edges (corners) - no defects greater than 0.040 in. deep.

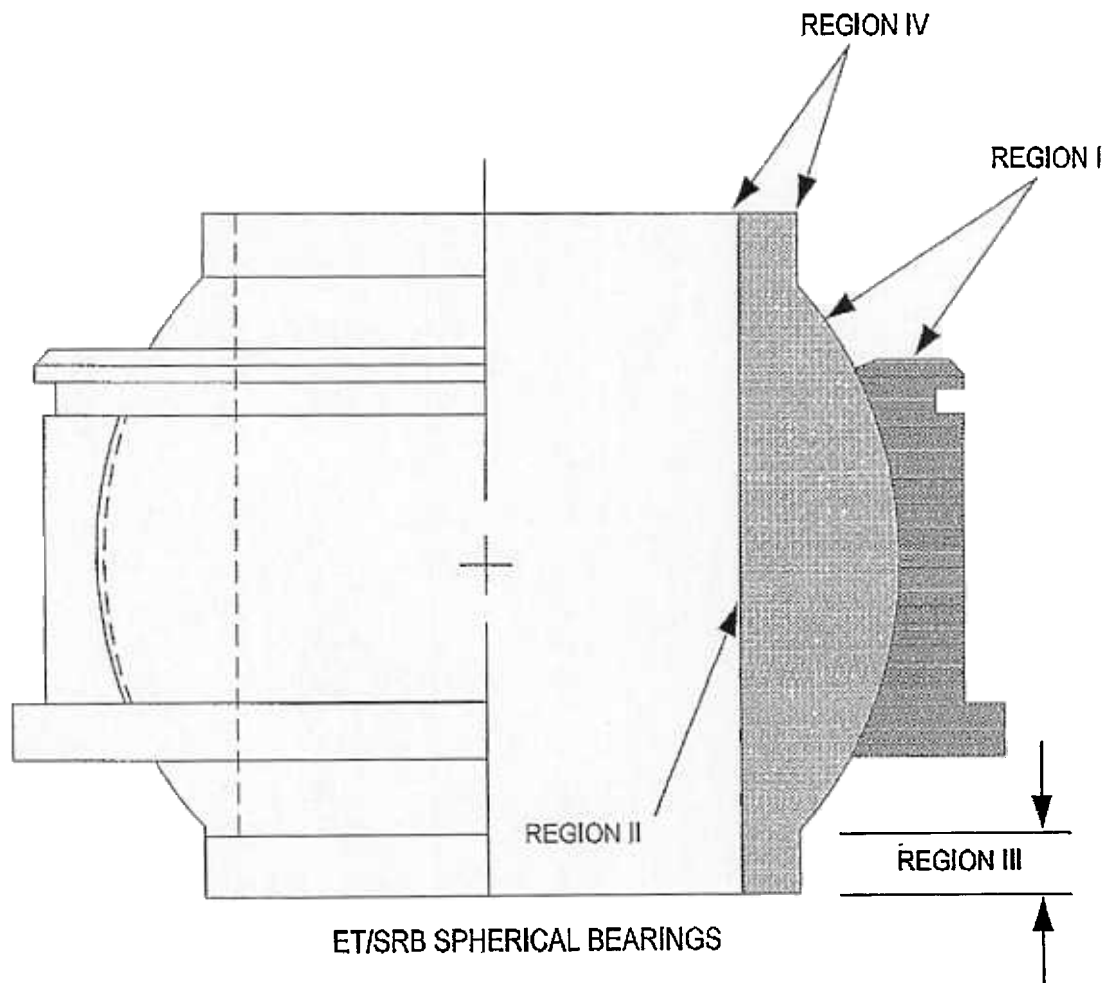


Figure 10-1: ET Spherical Bearing Inspection Regions (Ref. Only)

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PR ET-093-ST-0012

1/0-4 TOPS TME4

①

CSR-242

Install P78-3102 protective cover on EB-4 bearing as follows:

1. Insert -4-6 capscrew, with -4-7 and -4-8 flat washers, and -4-104 assembly in consecutive order through 36L12-4 bearing.
2. Install in consecutive order, -4-26 spacer, -4-104 assembly, -4-8 and -4-7 flat washers and -4-2 stop nut on -4-6 cap screw.

Torque stop nut (1) TORQUE TO 200 to 220 in. lb

Cal No. Y25640

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*** End of Operation 10 ***

① QMAN
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PR ET-093-ST-0012

OPERATION 20 PR Summarization and Closure

Shop: ET

Cntrl Rm Console: NA

OPR: ETM

Zone: na

Hazard (Y/N): N

Duration (Hrs): 1.69

Concluding Summary

Ref PD 1. The EB-4 (RH SRB Upper strut connection) spherical bearing was detected with vertical scratches during the Post ET Demate inspection. Mold impressions were taken of the 3 suspect bearing defects for dimension measurement. The impressions were analyzed QA and all three areas had "no measurable depth" which is quantitatively equivalent to a depth of less than 0.001 inch.

Therefore, EB-4 spherical bearing is acceptable per OMRS S00HB0.160 and Ref: 80901019010 (LI) ET Acceptance Manual . No RC action required.

Cause PD 1: Unavoidable damage from ET Demate from SRBs.

20-1

Close this PR.

Qw: 
051 11 02

*** End of Operation 20 ***

NOTED DURING

IMPRESSION EVALUATION RECORD

PAGE 1 OF 1

EFFECTIVITY/SRM NO.

PART NAME

PART NUMBER

APPROVAL/DATE

EB-4 BEARING

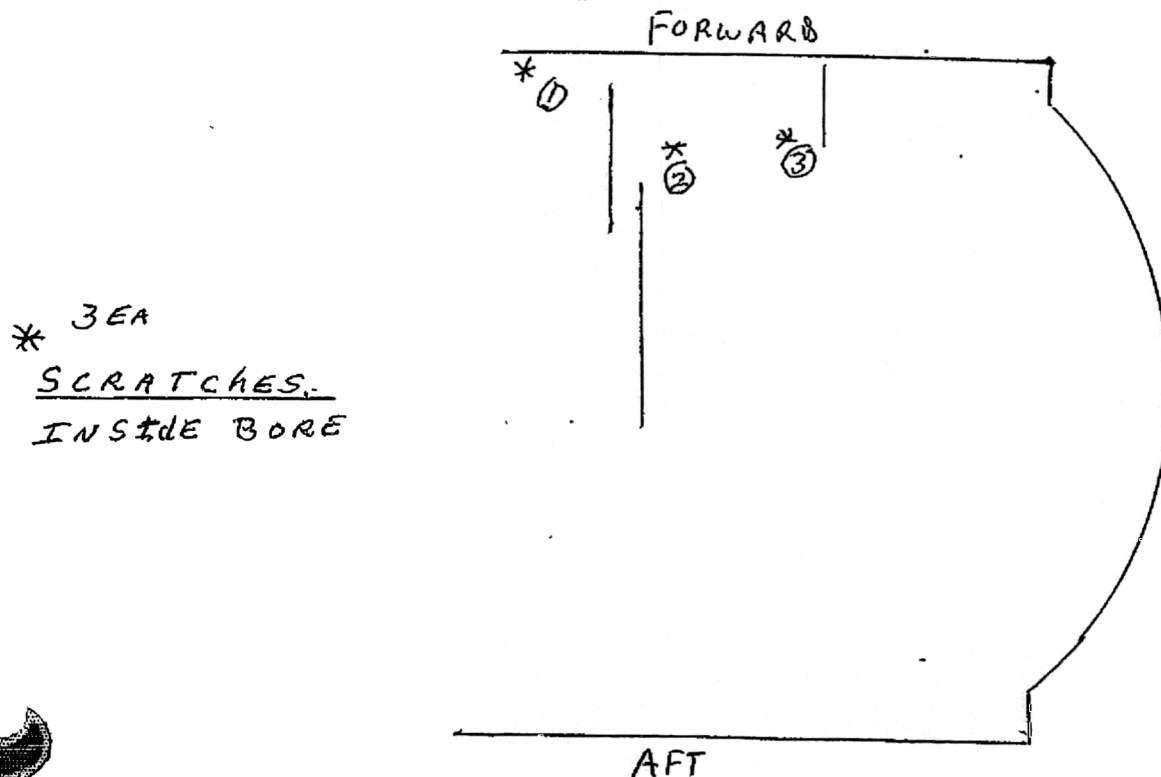
36L12-1

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OCT 04 2002

DESCRIPTION & DETAIL LOCATION OF ANOMALY ON HARDWARE:



RESULTS OF EVALUATION:

Area 1- defect depth, width not measureable
Area 2- defect depth, width not measureable
Area 3- defect depth, width not measureable

REMARKS:

RAM Optical Comparator
Mitutoyo Y07280
Mitutoyo Y10027